

Curriculum vitae of

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Education

- ◇ April 2005: doctorate in Structural Engineering at the Politecnico di Milano.
- ◇ 1999: “laurea” (master degree) in Civil (Structural) Engineering at the Politecnico di Milano, 99/100.
- ◇ 1992: “liceo classico” (highschool with emphasis on humanities), 60/60.

Research and professional career

- ◇ February 2018 – today: permanent position as Associate Professor in the Department of Civil and Environmental Engineering, Politecnico di Milano.
- ◇ February 2011 – January 2018: permanent position as Assistant Professor in the Department of Structural Engineering, Politecnico di Milano. After internal reorganization in 2014, it became the Department of Civil and Environmental Engineering.
- ◇ October 2008- February 2010: grant on “Innovative methods for materials and structures”, Department of Structural Engineering, Politecnico di Milano, supervisors prof. A. Corigliano and prof. U. Perego.
- ◇ October 2006 – September 2008: grant on “Innovative models for the study of micro-electromechanical system behaviour”, Department of Structural Engineering, Politecnico di Milano, supervisor prof. A. Corigliano.
- ◇ September 2005 – September 2006: grant on “Nonlinear analysis of a dam interacting with foundation in presence of lateral landslide, taking into account for artificial and natural joints”, Department of Structural Engineering, Politecnico di Milano, supervisor prof. G. Maier.
- ◇ May 2002 – April 2005: doctorate in Structural Engineering, Department of Structural Engineering at the Politecnico di Milano.
- ◇ May 2001 – February 2002: grant on “Evaluation of structural safety in concrete gravity dams”, Department of Structural Engineering at the Politecnico di Milano, supervisor prof. G. Maier.

- ◇ February 2000 – May 2001: R&D engineer in the field of numerical simulations of fluid-structure interaction in electromechanical systems subject to electric arc phenomena, for the company ABB Corporate Research, Milan, Italy
- ◇ July 1999 – February 2000: numerical simulations on quasi-brittle fracture in concrete gravity dams with a boundary element code and cohesive interface, Department of Structural Engineering, Politecnico di Milano, supervisor prof. G. Maier.
- ◇ September 1997 – July 1999: grant on mechanical tests at the Laboratorio Acceleratori Superconduttività Applicata (Applied Accelerator and Superconductivity Laboratory) for the Italian National Institute of Nuclear Physics in Segrate (Milan) (1997-1999) aimed on fracture tests of a titanium alloy at cryogenic temperatures (down to 4 K).

National and international research programs

Here only projects since 2011 are reported.

- ◇ participation to the PRIN 2015 “Multi-scale mechanical models for the design and optimization of micro-structured smart materials and metamaterials”. Coordinator: A. Corigliano. Started in late 2016 and currently active.
- ◇ local leader of LISA project (“Laboratorio Interdisciplinare per la Simulazione Avanzata”, Interdisciplinary laboratory for advanced simulation): calculation resources granted from Lombardia region and CINECA (a supercomputing centre) to test a parallel code on simulation of blade cutting through directional cohesive elements. Six months during 2016.
- ◇ participation to the Projects MARE-MOSENA, by STMicroelectronics in collaboration with the Dept. of Structural Engineering (2011-2014), then Dept. of Civil and Environmental Engineering 2014-today. Project MATERIAL RELiability (MARE) concerns mechanical issues in microsystems, while NANO MOTion SENSOR (MOSENA) concentrates on problem solving in advanced miniaturization of accelerometers and gyroscopes. Scientific leader of the project: A. Corigliano. Started from 2011 and currently active after several renewals.
- ◇ participation to PRIN 2008. “Meccanica dei materiali microstrutturati: identificazione multi-scala, ottimizzazione e controllo attivo” (Mechanics of micro-structured materials: multi-scale identification, optimization and active control). Local scientific leader: S. Mariani. Two years in between 2010-2012.
- ◇ local leader of LISA project (“Laboratorio Interdisciplinare per la Simulazione Avanzata”, Interdisciplinary laboratory for advanced simulation): calculation resources granted from Lombardia region and CINECA (a supercomputing centre) to test and optimize a shared-memory parallel code on domain decomposition. Six months during 2013.

- ◇ participation to the Lab4MEMS (ENIAC Nanoelectronics Framework) project. European project on simulation of thermo-compression processes for MEMS devices. Local coordinator: A. Corigliano. About six months during 2014.
- ◇ participation to the Safer Helmets project, granted by Fondazione CARIPLO on multidisciplinary study of sports helmets for new materials and monitoring of impacts through micro-sensors. Coordinator: S. Mariani. Two years in between 2014-2016.

Teaching experience

Lecturer from 2007 to 2016 (nine academic years) and again from 2017 to 2019 (two academic years).

BSc course of “Mechanics of Solids and Structures”,
Faculty of Architecture, Leonardo Campus,
Politecnico di Milano.

Lecturer from 2017 to 2019 (two academic years).

MSc module of “Mechanical Testing at Small Scale”
Faculty of Materials Engineering and Nanotechnology, Leonardo Campus,
Politecnico di Milano.

Lecturer from 2016 to 2019 (three academic years).

MSc module of “Structural Modelling”
(in the Integrated Course “Structural Modelling in Architecture and Numerical Computation”)
Faculty of Architecture, Leonardo Campus,
Politecnico di Milano.

Lecturer from 2015 to 2017 (two academic years).

BSc course of “Laboratory of Architectural Design 2”,
Faculty of Architecture, Leonardo Campus,
Politecnico di Milano.

Lecturer AY 2014 – 2015.

BSc course of “Principles of Structural Design”,
Faculty of Architecture, Leonardo Campus,
Politecnico di Milano.

Teaching Assistant from 2001 to 2015.

Courses: a total of 28 courses during these years in the fields of mechanics of solids and structures, fracture mechanics, application of the finite element method in structural engineering.

Faculties (varying during the years): Mechanical Engineering, Aerospace Engineering, Civil Engineering, Interior Design, Architecture.

Universities: Politecnico di Milano, Università di Bergamo (Dalmine), Università dell’Insubria (Varese).

Activity as thesis' supervisor

Micromechanical characterization of polysilicon films: on-chip testing, multi-uncertainty quantification and Bayesian inverse modelling. PhD student: Ramin Mirzazadeh. Supervisors: S. Mariani, A. Ghisi, E. Jansen. Doctorate in Structural, Seismic and Geotechnical Engineering, Politecnico di Milano, 2017.

Impatto tra corpi alla macro e alla micro scala. Student: Andrea Biagetti. Supervisor: C. Comi. MSc in Civil Engineering, Politecnico di Milano, 2017.

Seismic energy harvesting. Student: Qu Chang. Supervisor: A. Corigliano. MSc in Civil Engineering, Politecnico di Milano, 2016.

Caratterizzazione di dispositivi MEMS in silicio policristallino mediante prove statiche e dinamiche, in Italian. Students: Anghileri Luca, Delogu Marco, Dimiziani Beatrice, Filippi Stefano, Scocca Edoardo. Supervisors: A. Ghisi and A. Corigliano. BSc in Materials Engineering and Nanotechnology, 2016.

Caratterizzazione statica e dinamica di dispositivi MEMS per lo studio delle proprietà meccaniche del silicio policristallino, in Italian. Students: Abiosi Maria, Airaghi Fulvio, Belevi Filippo, De Ferraris Giacomo, Muraro Giacomo. Supervisors: A. Ghisi and A. Corigliano. BSc in Materials Engineering and Nanotechnology, 2016.

Modelling and experimental laboratory on MEMS, in Italian. Students: Lorenzo Coviello, Francesco Fagnoni, Davide Olianias, Marco Papparotto, Andrea Zapelli. Supervisors: A. Ghisi and A. Corigliano. BSc in Materials Engineering and Nanotechnology, 2014.

Modelling and simulation of a piezoelectric micro-gyroscope. Student: Giuseppe Russo. Supervisor: A. Corigliano. School of Civil and Environmental Engineering, Politecnico di Milano, 2014.

Numerical modelling of fracture processes in polycrystalline materials for microsystems, in Italian. Student: Alberto Capsoni. Supervisors: A. Corigliano and A. Ghisi. MSc in Environmental, Civil and Geotechnical Engineering, Politecnico di Milano, 2008.

A multi-scale approach for reliability analysis of micro-electromechanical systems, in Italian. Student: Fabio Fachin. Supervisors: S. Mariani and A. Ghisi. MSc in Aerospace Engineering, Politecnico di Milano, 2007.

Analytical-numerical comparisons on free body motion of a micro-electromechanical system, in Italian. Student: Massimiliano Tulipano Andreoli. Supervisors: S. Mariani and A. Ghisi. BSc in Environmental, Civil and Geotechnical Engineering, Politecnico di Milano, 2007.

Seminars held in Italy

Diagnostic analysis of concrete dams, in the framework of the course “Numerical methods for structure monitoring in civil engineering”, International Center for Mechanical Sciences (CISM), Udine (Italy), 2006.

Dynamic diagnostic analyses of concrete dams, allowing for fluid-structure interaction, in the framework of the course “Mechanical characterization of materials and diagnosis of structures by means of inverse analysis”, Ph.D. School in Structural, Earthquake and Geotechnical Engineering, XXII cycle, Milan, April 24, 2007.

Dynamic diagnostic analyses of concrete dams, allowing for fluid-structure interaction, in the framework of the course “Mechanical characterization of materials and diagnosis of structures by means of inverse analysis”, Ph.D. School in Structural, Earthquake and Geotechnical Engineering, XXIV cycle, Milan, March 26, 2009.

Periods abroad

January 2009 to February 2009: Research Laboratory in Electronics of the Massachusetts Institute of Technology, Cambridge, MA, USA, with prof. L. Daniel (in the framework of Rocca Project). Aim: nonlinear model order reduction.

August 17-28, 2009: department of mechanics University of Siegen (Germany) with prof. K. Weinberg (in the framework of Vigoni Project). Aim: anisotropic fracture in thin silicon plates for microelectronics.

2008-2009: short interactions (1-2 days) with nanoelectronics and nanotechnology centre IMEC in Leuven (Belgium) with the aim of simulation and experimental shock tests for MEMS accelerometers.

Research activity

The scientific and research activity, both in collaboration with academic National and International research projects and Italian industries, concerns the mechanics of materials and structures and the computational methods, briefly resumed in the points below.

- ◇ Cryogenic engineering and fracture at low temperatures.
- ◇ Numerical methods and tools for parameter identification in nonlinear constitutive models in elastic bodies with inelastic interfaces.
- ◇ Dam engineering: dam-reservoir interaction, nonlinear analyses of concrete dams.
- ◇ Estimate of viscous damping in MEMS under varying pressure conditions.
- ◇ MEMS behaviour during impacts: multi-scale methodologies for fracture propagation in polysilicon thin films.
- ◇ Mechanical characterization of polycrystalline silicon microsystems: homogenization, fatigue and fracture properties.

- ◇ Simulation of bonding processes in microsystems; evaluation of process-induced uncertainties on the electro-mechanical working behaviour.
- ◇ Computational methods for crack propagation in polycrystalline solids and for blade cutting and fracture in multi-layered thin-walled shells.

With reference to the list of publications at the end of the present document, the main contributions for the different themes are resumed below.

- Mechanical (tensile and fracture) testing and interpretation of the behaviour of a Ti-5Al-2.5Sn Extra Low Interstitial alloy for cryogenic purposes and identification of the parameters of the mechanical response through a Kalman filter (master thesis, R25, D24). Experimental tests on titanium (collaborations with INFN, P1-P3).
- Development and improvement of nonlinear interface constitutive models for natural and artificial joints in concrete dams (Ph.D. thesis, E1); simplified approaches for dam-basin interaction (C8, Ph.D. thesis).
- Finite element modelling of concrete dams for seismic verifications (R5, R6, R1).
- Kalman filtering for: (a) parameter identification of poro-ductile metals (master thesis, R25); (b) degradation in concrete dams (Ph.D. thesis).
- A multi-scale approach for the interpretation of fracture in polysilicon MEMS accelerometers, accounting also for material heterogeneity at the microscale (L1, R12, R14, R16, R15, R18, R20, R22, R24, R26, R2).
- Identification of interface constitutive law parameters in impact dynamics through a sigma-point (aka “unscented”) Kalman filter (R28, B24, B25, R13); non dissipative algorithms in structural dynamics (R19).
- Design and analysis of produced innovative on-chip testing (R23, R17) or working microsystems (R10).
- Numerical methods based on the linearization of Boltzmann equation (R27, B23) or integral formulations in free molecular flow for the description of gas-structure interaction in vibrating polysilicon MEMS (R21, B20); numerical simulation of fluid-structure interaction in vibrating micromirrors with large rotations (B10).
- Multiscale simulation of metallic bonding in microsystems (R9, B12, B1).
- Domain decomposition simulation of fracture propagation in polycrystalline solids (R11, R8).
- Formulation in explicit dynamics of selective mass scaling with solid-shell elements for blade cutting simulation (B9, R7, B5).
- New applications of silicon-based technology from microsystems industry to old problems (R4).

PUBLICATIONS

International papers with peer review

- R1 M. Colombo, M. Domaneschi, A. Ghisi, S. Griffini. Bearable maximum seismic action for existing concrete dams. *Ingegneria Sismica - International Journal of Earthquake Engineering*, 35, 3–245, 2018.
- R2 R. Mirzazadeh, A. Ghisi, S. Mariani. Statistical investigation of the mechanical and geometrical properties of polysilicon films through on-chip tests. *Micomachines*, 9, 1–15, 2018.
- R3 F. Confalonieri, A. Ghisi, U. Perego. Blade cutting of thin walled structures by explicit dynamics finite elements. *Meccanica*, 53, 1271–1289, 2018.
- R4 N. Robuschi, F. Braghin, A. Corigliano, A. Ghisi, A. Tasora. On the dynamics of a high frequency oscillator for mechanical watches. *Mechanism and Machine Theory*, 117, 276-293, 2017.
- R5 M. Colombo, M. Domaneschi, A. Ghisi, S. Griffini, G. Novati, U. Perego, L. Petrini, P. Valgoi. Stress verification of large concrete existing dams: comparison of two seismic Italian codes. *Ingegneria Sismica - International Journal of Earthquake Engineering*, 34, 61-81, 2017.
- R6 M. Colombo, M. Domaneschi, A. Ghisi. Existing concrete dams: loads definition and finite element models validation. *Structural Monitoring and Maintenance*, 3(2), 129-144, 2016.
- R7 F. Confalonieri, A. Ghisi, U. Perego. 8-Node solid-shell elements selective mass scaling for explicit dynamic analysis of layered thin-walled structures. *Computational Mechanics*, 56, 585-599, 2015.
- R8 F. Confalonieri, A. Ghisi, G. Cocchetti, A. Corigliano. A domain decomposition approach for the simulation of fracture phenomena in polycrystalline microsystems. *Computer Methods in Applied Mechanics and Engineering*, 277, 180-218, 2014.
- R9 A. Ghisi, S. Mariani, A. Corigliano, G. Allegato, L. Oggioni. A three-scale approach to the numerical simulation of metallic bonding for MEMS packaging. *Microelectronics Reliability*, 54, 2039-2043, 2014.
- R10 C. Comi, A. Corigliano, A. Ghisi, S. Zerbini. A resonant micro accelerometer based on electrostatic stiffness variation. *Meccanica*, 48, 1893-1900, 2013.
- R11 F. Confalonieri, G. Cocchetti, A. Ghisi, A. Corigliano. A domain decomposition method for the simulation of fracture in polysilicon MEMS. *Microelectronics Reliability*, 53, 1045-1054, 2013.
- R12 A. Ghisi, S. Mariani, A. Corigliano, S. Zerbini. Physically-based reduced order modelling of a uni-axial polysilicon MEMS accelerometer. *Sensors*, 12, 13985-14003, 2012.
- R13 S. Eftekhari Azam, A. Ghisi, S. Mariani. Parallelized sigma-point Kalman filtering for structural dynamics. *Computers & Structures*, 92-93, 193-205, 2012.

- R14 S. Mariani, R. Martini, A. Ghisi, A. Corigliano, M. Beghi. Two-scale simulation of drop-induced failure of polysilicon MEMS sensors. *Sensors*, 11, 4972-4989, 2011.
- R15 S. Mariani, R. Martini, A. Ghisi, A. Corigliano, M. Beghi. Overall elastic properties of polysilicon films: a statistical investigation of the effects of polycrystal morphology. *International Journal for Multiscale Computational Engineering*, 9, 327-346, 2011.
- R16 S. Mariani, R. Martini, A. Ghisi, A. Corigliano, B. Simoni. Monte Carlo simulation of micro-cracking in polysilicon MEMS exposed to shocks. *International Journal of Fracture*, 167, 83-101, 2011.
- R17 A. Corigliano, A. Ghisi, G. Langfelder, A. Longoni, F. Zaraga, A. Merassi. A microsystem for the fracture characterization of polysilicon at the microscale. *European Journal of Mechanics A*, 30, 127-136, 2011.
- R18 A. Ghisi, S. Kalicinski., S. Mariani, I. De Wolf, A. Corigliano. Polysilicon MEMS accelerometers exposed to shocks: numerical-experimental investigation. *Journal of Micromechanics and Microengineering*, 19, 035023, 2009.
- R19 S. Mariani, R. Martini, A. Ghisi. A finite element flux-corrected transport method for wave propagation in heterogeneous solids. *Algorithms*, 2, 1-18, 2009.
- R20 S. Mariani, A. Ghisi, A. Corigliano, S. Zerbini. Modeling impact-induced failure of polysilicon MEMS: a multi scale approach. *Sensors*, 9, 556-567, 2009.
- R21 A. Frangi, A. Ghisi, L. Coronato. On a deterministic approach for the evaluation of gas damping in inertial MEMS in the free-molecule regime. *Sensors and Actuators A*, 149, 21-28, 2009.
- R22 S. Mariani, A. Ghisi, F. Fachin, F. Cacchione, A. Corigliano, S. Zerbini. Multi-scale analysis of polysilicon MEMS sensors subject to accidental drops: effect of packaging. *Microelectronics Reliability*, 49, 340-349, 2009.
- R23 G. Langfelder, A. Longoni, F. Zaraga, A. Corigliano, A. Ghisi. A new on-chip test structure for real time fatigue analysis in polysilicon MEMS. *Microelectronics Reliability*, 49, 120-126, 2009.
- R24 S. Mariani, A. Ghisi, F. Fachin, F. Cacchione, A. Corigliano, S. Zerbini. A three-scale FE approach to reliability analysis of MEMS sensors subject to impacts. *Meccanica*, 43, 469-483, 2008.
- R25 A. Ghisi, S. Mariani. Mechanical characterization of Ti-5Al-2.5Sn ELI alloy at cryogenic and room temperatures. *International Journal of Fracture*, 146, 61-77, 2007.
- R26 S. Mariani, A. Ghisi, A. Corigliano, S. Zerbini. Multi-scale analysis of MEMS sensors subject to drop impacts. *Sensors*, 7, 1817-1833, 2007.
- R27 A. Frangi, A. Ghisi, A. Frezzotti. Analysis of gas flow in MEMS by a deterministic 3D BGK model. *Sensor Letters*, 6, 1-7, 2007.
- R28 S. Mariani, A. Ghisi. Unscented Kalman filter for nonlinear structural dynamics. *Nonlinear Dynamics*, 49, 131-150, 2007.

Publications in collaboration with INFN

- P1 C. E. Aalseth *et al.*. DarkSide-20k: A 20 tonne two-phase LAr TPC for direct dark matter detection at LNGS. *The European Physical Journal Plus*, 133, 1–144, 2018.
- P2 C. E. Aalseth *et al.*. Cryogenic Characterization of FBK RGB-HD SiPMs. *Journal of Instrumentation*, 12, P09030-1–P09030-7, 2017.
- P3 B. Bottino *et al.*. The DarkSide experiment. *Il Nuovo Cimento*, 40, 520–541, 2017.

Books

- BOOK1 A. Corigliano, R. Ardito, C. Comi, A. Frangi, A. Ghisi, S. Mariani.
Mechanics of Microsystems. ISBN-13: 978-1119053835, John Wiley & Sons, Inc., 2018.

In book chapters

- L1 S. Mariani, A. Ghisi, R. Martini, A. Corigliano, B. Simoni. Multi scale simulation of shock-induced failure of polysilicon MEMS. In *Advances in Electrical Engineering Research*, volume 1, Thomas E. Brouwer editor, Nova Science Publishers, Inc., 2011.

International conference proceedings

- B1 S. A. F.d Farshchi Yazdi, A. Ghisi, M. Garavaglia, A. Corigliano. Modelling and Simulation of Glass Frit Bonding of Silicon Wafers. *15th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, EuroSimE 2014*, Hannover, Germany, March 24–27, 2019, poster presentation.
- B2 A. Ghisi, M. V. Geninazzi, S. Mariani. Polysilicon MEMS sensors: sensitivity to submicron imperfections. *5th International Electronic Conference on Sensors and Applications*, November 15-30, 6 pages, 2018.
- B3 R. Mirzazadeh, A. Ghisi, S. Mariani. A Micromechanical On-Chip Testing Device for Polysilicon Films. *XXIV International Congress of Theoretical and Applied Mechanics (ICTAM)*, August 21-26, Montreal, Canada, 3 pages, 2016.
- B4 L. Andena, F. Caimmi, L. Leonardi, A. Ghisi, S. Mariani, and F. Braghin. Towards safer helmets: Characterisation, modelling and monitoring. In *The Engineering of SPORT 11, 11th International Sports Engineering Association (ISEA2016)*, Delft (Netherlands), July 11-14, pages 478-483, 2016.
- B5 A. Ghisi, F. Confalonieri, U. Perego. Finite element simulation of crack propagation and delamination in layered shells due to blade cutting. *VII European Congress on Computational Methods in Applied Sciences and Engineering, ECCOMAS 2016*, Crete Island, Greece, June 5-10, pages 295-308, 2016.

- B6 R. Mirzazadeh, A. Ghisi, S. Mariani. Assessment of overetch and polysilicon film properties through on-chip tests. *2nd International Electronic Conference on Sensors and Applications*, November 15-30, 2015, 6 pages.
- B7 M. Colombo, M. Domaneschi, A. Ghisi, G. Novati, U. Perego, L. Petrini. Validation of Finite Element Models of Concrete Dams Through Monitoring Data. *10th International Workshop on Structural Health Monitoring*, Stanford CA, USA, September 1-3, 2015, 8 pages.
- B8 A. Ghisi, F. Confalonieri, U. Perego. Selective mass scaling for multi-layer solid-shell discretization of thin-walled structures. *3rd ECCOMAS Young Investigators Conference*, Aachen, Germany, July 20-23, 2015, 4 pages.
- B9 F. Confalonieri, A. Ghisi, U. Perego. Simulation of Fracture and Cutting Processes in Thin-walled Multi-layer Shell Structures. In *9th European Solid Mechanics Conference*, pp.1-2, 2015.
- B10 F. Confalonieri, A. Ghisi, U. Perego. Explicit simulation of blade cutting and through-the-thickness fracture in multi-layer, thin-walled structures. In *IV International Conference on Computational Modeling of Fracture and Failure of Materials and Structures*, pp.1-2, CFRAC 2015.
- B11 A. Ghisi, F. Confalonieri, U. Perego. Blade cutting simulation with crack propagation through thin-walled structures via solid-shell finite elements in explicit dynamics. *PANACM 2015 - 1st Pan-American Congress on Computational Mechanics, in conjunction with the 11th Argentine Congress on Computational Mechanics, MECOM 2015*, Buenos Aires, Argentina, April 27-29, 2015, pages 304-313.
- B12 R. Mirzazadeh, S. Mariani, A. Ghisi, M. De Fazio. Fluid damping in compliant, comb-actuated torsional micromirrors. *15th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, EuroSimE 2014*, Ghent, Belgium, April 7-9, 2014, art. no. 6813871.
- B13 A. Ghisi, A. Corigliano, S. Mariani, G. Allegato, L. Oggioni. A top-down, three-scale numerical analysis of wafer-to-wafer metallic bonding. *1st International Electronic Conference on Sensors and Applications*, June 1-16, 2014, 6 pages.
- B14 A. Ghisi, A. Corigliano, S. Mariani, G. Allegato. A multi-scale approach to wafer to wafer metallic bonding in MEMS. *14th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, EuroSimE 2013*, Wroclaw, Poland, April 15-17, 2013, art. no. 6529905.
- B15 A. Corigliano, R. Ardito, C. Comi, A. Frangi, A. Ghisi, S. Mariani. Microsystems and mechanics. *Procedia IUTAM*, 10, 138-160, 2013.
- B16 F. Confalonieri, G. Cocchetti, A. Ghisi, A. Corigliano. Simulation of dynamic fracture processes in polycrystalline silicon microsystems by means of a multi-step, domain decomposition method. *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012)*, Vienna, Austria, September 10-14, 2012, 6453-6471.

- B17 F. Confalonieri, G. Cocchetti, A. Ghisi, A. Corigliano. A domain decomposition method for the simulation of fracture in polysilicon MEMS. *13th International Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, EuroSimE 2012*, Cascais, Portugal, April 16-18, 2012, art. no. 6191769.
- B18 S. Mariani, S. Eftekhar Azam, A. Ghisi, A. Corigliano, B. Simoni. Reduced order modelling of MEMS dynamics. *DTIP 2011 - Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS*, Aix-en-Provence, France, May 11-13, 2011, art. no. 6108016, pages 53-58.
- B19 S. Mariani, A. Ghisi, R. Martini, A. Corigliano, B. Simoni. Analysis of shock-induced polysilicon MEMS failure: A multi-scale finite element approach. *Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, DTIP 2010*, Seville, Spain, May 5-7, 2010, art. no. 5486521, 16-21.
- B20 S. Mariani, A. Ghisi, R. Martini, A. Corigliano, B. Simoni. A multiscale-stochastic finite element approach to shock-induced polysilicon MEMS failure. *Proceedings of the 9th International Conference on Thermal, Mechanical and Multiphysics Simulation and Experiments in Micro-Electronics and Micro-Systems (EuroSimE 2009)*, Delft, Netherlands, April 26-28, 2009, 7 pages.
- B21 G. Langfelder, A. Longoni, F. Zaraga, A. Corigliano, A. Ghisi, A. Merassi. Real-time monitoring of the fatigue damage accumulation in polysilicon microstructures at different applied stresses. *8th IEEE Conference on Sensors*, Christchurch, New Zealand, October 25-28, 2009, 6 pages.
- B22 A. Frangi, A. Ghisi. A wide pressure range estimate of gas damping in polysilicon inertial MEMS devices. *Proceedings of the 8th International Conference on Thermal, Mechanical and Multiphysics Simulation and Experiments in Micro-Electronics and Micro-Systems (EuroSimE 2008)*, Freiburg, Germany, April 21-23, 2008, 7 pages.
- B23 A. Ghisi, S. Kalicinski, S. Mariani, I. De Wolf, A. Corigliano. Numerical-experimental comparison of low-*g* and high-*g* tests on a polysilicon MEMS accelerometer. *Proceedings of the 8th International Conference on Thermal, Mechanical and Multiphysics Simulation and Experiments in Micro-Electronics and Micro-Systems (EuroSimE 2008)*, Freiburg, Germany, April 21-23, 2008, 6 pages.
- B24 A. Ghisi, F. Fachin, S. Mariani, A. Corigliano. Multi scale modeling of shock-induced failure of polysilicon MEMS. *Proceedings of the 7th International Conference on Thermal, Mechanical and Multiphysics Simulation and Experiments in Micro-Electronics and Micro-Systems (EuroSimE 2007)*, London, UK, April, 2007, 160-167.
- B25 A. Frangi, A. Ghisi. The BGK kinetic model applied to the analysis of gas-structure interactions in MEMS. *Proceedings of the 7th International Conference on Thermal, Mechanical and Multiphysics Simulation and Experiments in Micro-Electronics and Micro-Systems (EuroSimE 2007)*, London, UK, April, 2007, 600-607.

- B26 A. Corigliano, A. Ghisi, S. Mariani. Impact induced composite delamination: state and parameter identification via unscented Kalman filter. *ECF 16, 16th European Conference of Fracture*, Alexandroupolis, Greece, July 3-7, 2006, 8 pages.
- B27 A. Corigliano, A. Ghisi, S. Mariani. Parameter identification of nonlinear constitutive laws by an unscented Kalman filter. *IX International Conference on Computational Plasticity (COMPLAS 2005)*, Barcellona, Spain, September 5-8, 2005, 4 pages.

National conference proceedings

- C1 F. Confalonieri, A. Corigliano, A. Ghisi. Domain decomposition strategies for the simulation of fracture processes in polysilicon microsystems. *XXI Congresso di Meccanica Teorica e Applicata*, Turin, September 17-20, 2013, 10 pages on CD.
- C2 F. Confalonieri, G. Cocchetti, A. Ghisi, A. Corigliano. Simulation of fracture phenomena in polycrystalline microsystems by a domain decomposition approach. *XX Congresso di Meccanica Teorica e Applicata*, Bologna, September 12-15, 2011, 10 pages on CD.
- C3 A. Corigliano, A. Ghisi, A. Ghisi, G. Langfelder, A. Longoni, F. Zaraga. Polysilicon MEMS fatigue and fracture characterization via on chip testing. *XIX Congresso di Meccanica Teorica e Applicata*, Ancona, September 14-17, 2009, 10 pages on CD.
- C4 F. Cacchione, F. Fachin, A. Ghisi, S. Mariani, A. Corigliano, S. Zerbini. Reliability analysis of MEMS sensors subject to drop impacts. *XVIII Congresso di Meccanica Teorica e Applicata*, Brescia, September 11-14, 2007, 9 pages.
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